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Alcohol, tobacco, caffeine and other drug use among nursing students in the Tayside Region of Scotland: a comparison between first- and final-year students

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Abstract

There has been much discussion as to when health professionals begin, or increase, recreational or illicit drug use leading to impairment. A survey of 102 first- and 107 last-year nursing students selected from the Tayside Region of Scotland indicated that 87% had drunk some form of alcohol during the past year with 46% drinking at least once a week. Of all students, 92% used caffeine, 36% tobacco, 15% marijuana and 10% or less used other drugs at least once during the past year. Approximately 31% smoked on a daily basis. There were few significant differences in consumption patterns between first- and last-year students, which is contrary to several other studies of students. Approximately the same percentage of students smoked compared with other recent studies concerning Scottish nursing students. They consumed marijuana and other drugs less frequently compared with nursing students in other studies.

Introduction

Drugs are defined as substances that affect the homeostasis of the body. Psychotropic drugs are substances that primarily exert a depressant or stimulant effect on the central nervous system and 'psyche' of the individual. The use of psychoactive drugs generally results in a feeling of well being, euphoria, relaxation and/or relief from stress and physical and emotional pain.

Recreational and other non-prescription psycho-tropic drug use among health professionals has been estimated to be higher than for the population as a whole. This is especially true for those individuals, such as physicians and nurses, who have easy access to a variety of substances. As a reflection of abuse in these professions, self-help organizations such as impaired nurse and physician groups have begun to be established (Rotheram, 1980; Bissell and Jones, 1983).

Drug use and abuse by health professionals include common recreational substances such as caffeine, alcohol and tobacco along with medical substances such as opiates, other analgesics and tranquilizers. The greatest drug of abuse is thought to be alcohol. Bissell and Jones estimate that there are some 75 000 alcoholic nurses in the United States alone. One American study indicated that 13% of senior nurses at one nursing school were already experiencing alcohol-related problems (Haach and Harford, 1984).

However, it is not clear as to when drug taking patterns begin and whether or not students in the health professions increase their drug use during their education and training.

Some reports, from English-speaking countries, suggest that as students go through their education, a higher percentage of them consume recreational drugs including alcohol, caffeine, marijuana and tobacco. Kory and Crandall (1984) found that there was a positive correlation between age and all recreational drug usage among a group of medical students in a large American medical school. Engs (1982) reported that, of over 1600 helping professional students (including medicine, nursing, pharmacy and social work) in Queensland, Australia, there was a higher consumption of alcohol among last-year students (16.4 g) compared with first year students (13.6 g). Another report from the same study indicated an increase in marijuana, caffeine and cigarette consumption (Engs, 1980).

Engs and Hanson (1985) in a nationwide study of over 5000 American university students found that 79 % of first-year students drank at least once a year compared with 85 % in the last year in school, a significant increase of 6%. In the 1980 study by Engs both the quantity and frequency of current use of caffeine was found to increase from the first (245 mg) to last year in school (329 mg). In this same study of Australian students an increase of current marijuana use was found between the first- (8%) and last- year (11 %) students. Likewise tobacco use was found to increase between the first (5 cigarettes/day) and final year (11 cigarettes/day) students. A report by Murray *et al.* (1983) with - 200 students at a London nursing school indicated that there was an increase in regular smokers from the first (8 %) to the last year (22 %) of training.

A study by Small and Tucker (1978) reported that among a sample of 58 nursing students at one hospital in Edinburgh, 41 % of the first- and 44% of the senior-year students smoked. It has been suggested by several authors (Small and Tucker, 1978; Leathar, 1980; Tagliacozzo and Vaughn, 1982) that job stress and social pressures are the major reasons for smoking among nurses. The environmental pressure is thought to increase as nurses gain more responsibility, but little respect or authority, as they go through their training, thus they increase smoking to cope with the stress.

On the other hand, some studies have reported no change or even a decrease in recreational drug use, including smoking, as students go through their course of study. A nationwide study of American University students by Engs and Hanson (1986) found that there was a decrease in heavy drinkers between freshmen (23%) and seniors (14%). A sub- sample of 170 nursing

students from this study (Engs and Hanson, 1988) found that 7% of all nursing students were heavy drinkers with few differences between the first- and last-year students.

A report concerning nursing students in the Forth Valley Health Board Area of Scotland (Jones, 1985) found that fewer students, after 18 months of training (10%), smoked compared with a group of students before the start of their medical/surgical training (26%). It was thought that information gained in this class may have been responsible for the smoking decrease. A study by Ferguson and Small (1985) indicated that fewer students in the last year (13%) compared with students in the first year of training (21 %) smoked. They also noted that there had been a decrease to 28 % of all nursing students who smoked compared with an average of 40% in their 1978 study. This decrease in smoking over time was thought to be due to the nationwide on-going AntiSmoking Health Education program. On the whole, however, students in post-secondary school have been found to increase recreational drug taking patterns from the first to the last year of training.

Though there have been reports from some English-speaking countries about nursing and other students' recreational drug use, few, other than for smoking, have been reported from Scotland.

Thus the purpose of this investigation was to examine the drug-taking patterns of first- and final-year nursing students in one region of Scotland. The purpose was to determine if there was a difference in recreational drug use patterns between newly entered students and students in their last year of nurses training.

Methods

The Tayside region of Scotland is situated on the East Coast. It has a population approaching 400 000 with the main centre at Dundee. Nurses' training is under- taken at three colleges attached to several hospital facilities in the area and at a college of technology.

Of the 1000 student nurses in the region -20%, or 200, students from the total population were to be selected for the study with an equal number to be obtained from the first (newly entered) and from the senior (final year) classes. This cross-sectional design, in which a similar number of subjects were selected for each group, is a limitation to the study as there could be population differences between the two cohorts. However, in recent years this design has commonly been used in numerous studies in English-speaking countries to gather information concerning alcohol and other drug use among various groups including students in different class (grade) levels.

Of all students in the sample 102 were from the first year and 107 from senior students. Of both the first and the final year students 50% were from Dundee (a major university hospital), 25% each from Perth Royal Infirmary (a busy district general hospital) and Strachathro Hospital (a small district general hospital). These percentages approximately represent the proportion of students in the three hospitals. About half of the students from each of the three training centres

were from the first- and last-year classes. The students were approached during a lecture at the beginning of the college session during the autumn term of 1982. Approximately every other student or about half of the students in the classroom were asked to participate in the study. Before administration of the questionnaire, the purpose of the study, procedures used to safeguard students' anonymity and the voluntary character of the participation were discussed. Of the students approached none refused to participate.

The *Queensland Alcohol and Drug Study Questionnaire* (Engs, 1980) was used for the study. It was originally compiled on the basis of World Health Organization (WHO, 1976) recommendations for standardization in research on drug and alcohol behaviours for international research. Consumption of <20 g absolute alcohol/day is considered 'light' drinking; 20-39 g is considered 'moderate'; 40-59 g is termed 'moderate/heavy'; 60 - 79 g is 'heavy'; and 80 g and over/day is considered 'very heavy' drinking. Consumption of 1-249 mg of caffeine/day is deemed 'light'; 250-749 mg is considered 'moderate'; and 750 mg plus is termed 'heavy' caffeine intake, according to the WHO. Smoking 1 - 10 cigarettes/day is considered 'light' consumption; 11-20 cigarettes is termed 'moderate'; 21-40 cigarettes/day is 'heavy' smoking; and smoking 41 and over cigarettes/day is considered 'very heavy' consumption. A mean number of analgesics taken per day is termed 'light' if it is 1 or less; a mean of 2-20 pills/day is considered 'moderate'; and a mean of 21 and over pills is deemed 'heavy' intake by the WHO. To assess the amount of alcohol, caffeine in coffee and tea, cigarettes, over-the-counter pain medication, etc. each respondent was asked to report his/her usual frequency of use for the various substances and the usual amount consumed per occasion during the past year. The grams of absolute alcohol in beer, wine and spirits, milligrams of caffeine from coffee and tea, and the number of pain pills, and cigarettes were calculated for each person for the usual amount consumed per occasion. To determine the average amount of any substance consumed per day, a quantity/frequency procedure was used as follows.

The frequency-of-use responses were assigned 'loading values' from 365 for those individuals who reported that they consumed the product every day, to zero for those who had not used the substance during the past year. The loading value was then multiplied by the quantity of the substance consumed and divided by 365 to obtain the amount consumed on a daily basis. (The factors used in calculating the amount of substance consumed were: every day = 365; 3 or 4 times a week = 182; 1 or 2 times a week = 78; 2-4 times a month = 34; 2 or 3 times a year = 3.5; about once a year = 1.0; have used or experimented with = 0.1; never used = 0.) The amount of absolute alcohol consumed on a daily basis was calculated as the sum total of absolute alcohol consumed in the form of beer, wine and spirits per day. To calculate the amount of caffeine consumed

per day the amounts of caffeine in coffee and tea were added together.

The Statistical Package for the Social Sciences program was used to derive *t*, *F* and χ^2 statistics to determine the probability of differences between demographic variables and the use of various substances.

Results

The resulting sample contained 89% females and 11 % males. Of these individuals 49% were first-year and 51 % were final-year students. The sample of males was too small for statistical comparison with females in this study.

Table I. Frequency of alcohol and other drug use by the percentage of students who used the substance during the past year at least once during the year, at least once a month, at least once a week and every day

Drug	Percentage of students				No. of students Base = 100%
	At least once a year	At least once a month	At least once a week	Every day	
Alcohol					
Beer	51	32	21	1	106
Wine	86	45	12	1	179
Spirits	87	75	46	1	182
Caffeine	92	90	86	75	192
Analgesics	88	47	9	1	184
Tobacco	36	35	34	31	78
Marijuana	5	3	2	1	10
Antihistamines	9	2	1	*	19
Sedatives	3	1	1	*	7
Tranquilizers	2	*	*	*	4
Hallucinogens	2	1	*	*	3
Stimulants	2	1	*	*	4
Cocaine	1	1	*	*	1
Opiates	2	1	1	*	3

Total number of students: $N = 209$.

* < 1%.

Table II. Frequency of alcohol and drug use by the percentage of first- and final-year students who used the substance during the past year at least once during the year, at least once a month, at least once a week and every day

Drug	Percentage of students								Number of students	
	1st	FIN	1st	FIN	1st	FIN	1st	FIN	1st	FIN
	At least once a year		At least once a month		At least once a week		Every day		Base = 100%	
Alcohol										
Beer	51	51	30	35	20	21	1	*	52	54
Wine	81	91	38	51	10	13	1	*	83	96
Spirits	84	90	71	79	42	50	*	1	86	96
Caffeine	93	90	92	88	88	83	77	73	96	96
Analgesics	86	90	50	44	8	9	*	2	88	96
Tobacco	35	37	34	36	32	36	30	33	38	40
Marijuana	6	4	4	1	3	*	1	*	6	4
Antihistamines	7	11	1	3	*	2	*	*	7	12
Sedatives	4	3	1	*	1	*	*	*	4	3
Tranquilizers	2	2	*	*	*	*	*	*	2	2
Hallucinogens	3	*	2	*	*	*	*	*	3	0
Stimulants ^a	4	*	2	*	*	*	*	*	4	0
Cocaine	1	*	1	*	*	*	*	*	1	0
Opiates	2	1	1	1	1	*	*	*	2	1

Number of students: first year (1st), $N = 102$; final year (FIN), $N = 107$.

* < 1%.

^a $P < 0.05$.

Table III. Quantity range of the most commonly used substances among first- and final-year students who consumed the substance two or three times a year or more (in percent)

	Percentage of students			No. of students
	Total	First year	Final year	Base = 100%
Alcohol (g absolute alcohol/day)				
1–19 ('light')	82	80	85	158
20–39 ('moderate')	12	15	9	23
40–59 ('moderate/heavy')	3	2	3	5
60–79 ('heavy')	1	1	1	2
80+ ('very heavy')	2	2	2	4
Caffeine (mg/day)				
1–249 ('light')	15	16	14	31
250–749 ('moderate')	65	67	63	135
750+ ('heavy')	20	17	22	41
Tobacco (mean no. cigarettes/day)				
1–10 ('light')	25	31	21	19
11–20 ('moderate')	51	44	56	38
21–40 ('heavy')	24	25	23	18
41+ ('very heavy')	*	*	*	0
Analgesics (mean no. pills/day)				
0–1 ('light')	99	97	98	180
2–20 ('moderate')	1	3	2	36
21+ ('heavy')	*	*	*	0

See Table II for numbers of students involved.

* < 1%.

Alcohol

Alcohol in either the form of wine, spirits or beer was used by most students at some point during the past 12 months (Table I). During this time period wine was consumed by 86 %, spirits by 87 % and beer by 51 % of the students. There was no significant difference in either frequency or quantity of alcohol consumption between the newly entered compared to senior year students (Tables II and III). Spirits were the most frequently consumed beverage, followed by wine and then beer, with 75% consuming spirits, 45 % wine and 32 % beer once a month or more.

Of students who drank, 2% consumed 60 g or more absolute alcohol/day (6 or more drinks) which could be considered 'heavy' or 'at risk' drinking, and 2% drank from 40 to 59 g absolute alcohol/day which could be considered 'moderate/heavy' or 'possible problem drinking' according to the WHO (Table III). The mean quantity of absolute alcohol consumed per day was 13.7 g which is considered 'light' drinking. There was no significant difference between first- and final-year students in alcohol consumption.

Caffeine

The most frequently used substance consumed on a weekly and daily basis was caffeine. Over 92 % of students used caffeine in the form of coffee or tea at least once a year (Table I), 90%

consumed it monthly and 75% consumed it on a daily basis. They consumed a mean of 536 mg (4.5 cups) a day which is considered 'moderate' consumption. However, 203 of the students consumed over 750 mg (6 cups) a day, which is considered 'heavy' consumption possibly leading to health problems.

Analgesics

Non-prescription analgesics (aspirin, etc.) were consumed by 883 once a year, 473 of the population at least once a month (Table I) and 93 once a week. There was no significant difference between the newly entered and the senior students (Table II) for either frequency or quantity of analgesic consumption.

Tobacco

Table I shows that tobacco was the next most frequently used drug. Tobacco was consumed by 363 of the group at least once a year, by 353 monthly, 343 weekly and 313 on a daily basis. There was no significant difference in the frequency or the amount of tobacco consumed between nursing students in the first compared with the last year in school.

Marijuana

Of all students 53 had tried marijuana during the past year and 33 smoked on a monthly basis. There was no significant difference between students in the first and last year in school in the frequency of marijuana smoking.

Other drugs

Under 23 of students were current users of the other drugs, and under 103 had used any of the other substances once in the past year. Other than for a significant higher ($\chi^2 = 19.6$ d.f. = 1 $P < 0.05$) use of stimulants (amphetamines, speed) by first-year students, compared with last-year students, there was no significant difference between the year in school for any other drug use.

Discussion

There was no significant difference in drug-taking patterns between first and last year students, with the exception of a higher use of stimulants among first-year students. There is no clear explanation for this higher use of stimulants. The results of this study would suggest no change in alcohol and drug use as these students went through training. This is contrary to most other studies which have indicated increased frequency and quantity of consumption of alcohol and other drugs among students in general, and health professional students, in particular, as they go through their post-secondary education (Small and Tucker, 1978; Engs, 1980; Murray *et al.*, 1983; Kory and Crandall, 1984; Engs and Hanson, 1985).

The results in this study could have been due to population differences between the two cohorts. On the other hand, perhaps these Scottish nursing students did not experience the environmental stress which has been suggested as an adjunct to training that leads to increased smoking and possibly other recreational drug use.

The overall smoking data in this study indicating that 31.3% are daily smokers appears to be similar to statistics concerning nursing students in Scotland. Jones (1985) reported that 33.3% of his sample were current smokers and 28.3% of Ferguson and Small's (1985) sample were current smokers. The percentage is similar for women in Scotland as a whole as reported by the Royal College of Physicians (1983) (30.3%), and in the 1982 General Household Survey for Great Britain (1984) (32.3%). It is, however, lower compared with the General Household Study (1984) which indicated that 36.3% of all women in the 20-24-year-old group smoked.

There are some differences in drinking patterns among these student nurses compared with a sample of Australian nursing students using the same questionnaire (Engs, 1980). A slightly higher percentage (93.3%) of Australian students had consumed alcohol over the past year. However, the Scottish sample consumed a slightly higher quantity compared with the Australian nursing students (13.7 versus 9.4 g absolute alcohol/year). (Both the Scottish and Australian samples contained - 853 females so possible difference due to sex was unlikely.)

However, it needs to be kept in mind that even though the same questionnaire was used, differences in population groups may have caused these results.

Also, the WHO category of 0-19 g absolute alcohol/day is considered 'light drinkers' which would put both samples in the same category.

A higher percentage of the Scottish nursing students (87 versus 79 %) had consumed alcohol compared with nursing students who were part of a nationwide American sample of university students (Engs and Hanson, 1988). This percentage, however, was lower compared with Haach and Harfords' (1984) American sample (97%) of nursing students at one university. Again, comparisons between different population groups, and sampling procedures, must be kept in mind.

Compared with women in Scotland as a whole, in Simpura's study (1981) a similar percentage of these students drank some type of alcohol beverage (87 versus 85%). In any one week 50% of Scottish women drink which is slightly higher than the 46 % of students in this present sample (Dight, 1976). Of all students 3 % could be considered 'heavy' drinkers which is similar to the percentage of heavy drinkers in Scotland (5%) according to Ritson (1986).

There also appears to be a slightly higher frequency of caffeine consumption by this present sample (92 %) as compared with nursing students in the Australian (88 %) study using the same

questionnaire (Engs, 1980). They also consumed more caffeine on a daily basis (536 mg) compared with the Australian group (356 mg).

A similar percentage of nursing students in this sample 88 % compared with the Australian sample (89%) had consumed analgesics. As far as other drugs were concerned, a lower percentage of the Scottish nursing students had used the other drugs compared with the Australian nursing students.

Implications

The results of this study introduce more questions than answers. The percentage of the student nurses in both the first and final year who smoked was similar to or lower than other student studies. However, unlike several other studies of university- age students there was not a higher rate of any drug use, including tobacco, for final-year students compared with newly entered students. Also the higher rate of stimulant (amphetamine) use among the first- year students cannot be explained unless stimulant use is increasing among younger pupils. A very slightly higher percentage of students in this sample consumed alcohol on a weekly basis compared with women in Scotland as a whole, which under the stressful work environment of the hospital could lead to increased alcohol use and abuse. However, the mean quantity of alcohol consumed was between 1 and 19 g/day, which is considered moderate drinking. The Scottish nursing students also consumed a slightly higher amount of alcohol/day compared with Australian nursing students with the identical questionnaire.

The results of the study appear to suggest few problems with recreational drug use, with the exception of smoking. Based upon the previously discussed literature, the prevention of smoking among student nurses may need a combination of efforts. First of all anti-smoking health education needs to be included in the nursing programme. Due to the fact that several studies have indicated that job stress and social pressure are primarily the reasons why nurses smoke, perhaps research needs to be carried out which includes stress reduction techniques, alternatives to smoking and other drugs, assertive training and problem solving skills as part of nurses training to see if this can help prevent smoking. Information concerning alcohol, problem drinking and other drug abuse needs to be included in the curriculum for both professional and personal use.

Though this study did not indicate an increase in recreational drug use between first- and final-year students in the Tayside Region of Scotland, further studies need to be carried out to ascertain the alcohol and other drug taking patterns, in addition to tobacco, of nurses after they have been practising for a few years. This needs to be considered as other investigations among students have suggested increases in recreational substances. Research in this area could possibly help shed light on when prevention and intervention programs can best be carried out in order to prevent possible psycho-active drug abuse including tobacco and alcohol among nurses in general.

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